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ABSTRACT

The New Jersey College Basic Skills Placement Test (NJCBSPT) is administered in a new form each year to all entering freshmen in New Jersey public colleges and 12 participating independent colleges. The NJCBSPT was taken by 44,344 students from March through December 1985. Test results revealed the following: (1) 26% were proficient in verbal skills, 32% in computation skills, and 12% in elementary algebra; (2) 34% of the students lacked proficiency in verbal skills, 44% in computation skills, and 59% in elementary algebra; (3) higher percentages of the recent high school graduates appeared to be proficient in each area than the test group as a whole; (4) the four-year state colleges and the university sectors traditionally enrolled better prepared students than the open-admission county colleges; and (5) over the past several years, while NJCBSPT results have remained fairly constant, Scholastic Aptitude Test (SAT) scores have begun to increase after declining for two decades. While efforts have been initiated in New Jersey to strengthen the preparation of new high school graduates, two demographic factors will have a negative effect on the basic skills problem in the more immediate future. First, colleges are increasingly recruiting students from an older, nontraditional population, who typically have greater remediation needs than recent high school freshmen. Second, an increase is anticipated in the proportion of linguistically diverse students in future freshman classes. (AYC)

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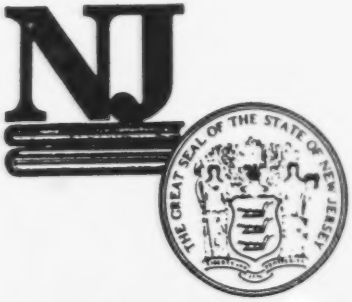
Results of the New Jersey College Basic Skills Placement Testing Fall, 1985



NEW JERSEY BASIC SKILLS COUNCIL

Department of Higher Education

March 21, 1986

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Report to the Board of Higher Education on the Results of the New Jersey College Basic Skills Placement Testing

Fall, 1985 Entering Freshmen

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EXECUTIVE SUMMARY

The New Jersey College Basic Skills Placement Test (NJCBSPT) is administered in a new form each year to all of the entering freshmen in New Jersey public colleges and twelve participating independent institutions. Now in its eighth form, the NJCBSPT was taken by 44,344 students from March through December 1985. The number of test takers declined 9.5% from 1983 to 1984 and another 4.7% from 1984 to 1985.

Basic Skills Proficiencies of the Fall 1985 Entering Freshmen

Students are tested in Reading, Sentence Sense, Essay, Computation and Elementary Algebra. Proficiency in "verbal skills" is measured by a "Total English" composite score derived from the reading, sentence sense and essay tests. The students entering in the fall of 1985 were judged to have the following levels of proficiency in basic skills according to the standards set by the Basic Skills Council[1]:

In verbal skills, 26% appeared proficient,
40% lacked proficency in some areas and
34% lacked proficency,

In computation, 32% appeared proficient,
24% lacked proficiency in some areas and
44% lacked proficiency

In elementary algebra, 12% appeared proficient,
29% lacked proficiency in some areas and
59% lacked proficiency

The proportion of students who are well prepared to begin college work in New Jersey continues to be far below what colleges consider desirable. In verbal skills and in elementary algebra the percentage of "appear proficient" students is unchanged from 1984. The Council is encouraged by a four-point increase over 1984 (from 28% to 32%) in the percentage of students who appear proficient in computation. However, the increase in computation proficiency only returns the statewide level back to that found in 1982, and should not be interpreted as an upward trend.

[1]The New Jersey Basic Skills Council is an advisory group of twelve faculty and administrators drawn from each of the college sectors in the state of New Jersey.

Results for Recent High School Graduates

Students who graduated in the spring of 1985 and were admitted to New Jersey colleges for the fall of 1985 made up 61.5% (27,791) of the test-takers. The pattern of proficiencies for these students is similar to that of the total population tested:

In verbal skills, 28% appeared proficient,
43% lacked proficiency in some areas and
29% lacked proficiency

In computation, 39% appeared proficient,
26% lacked proficiency in some areas and
35% lacked proficiency

In elementary algebra, 16% appeared proficient,
38% lacked proficiency in some areas and
46% lacked proficiency

Results by College Sector

The four-year state colleges and the university sectors traditionally enroll better prepared students than the open-admission county colleges, as can be seen in the following table:

	APPEAR PROFICIENT %	LACK PROFICIENCY IN SOME AREAS %	LACK PROFICIENCY %
COUNTY COLLEGES			
Verbal Skills	16	40	45
Computation	19	24	58
Elementary Algebra	4	20	77
STATE COLLEGES			
Verbal Skills	30	47	24
Computation	39	30	31
Elementary Algebra	11	45	44
RUTGERS			
Verbal Skills	60	33	7
Computation	72	18	9
Elementary Algebra	43	44	13
NJIT			
Verbal Skills	33	43	23
Computation	80	14	5
Elementary Algebra	52	43	4

Because a large number of inadequately prepared students continue to enter New Jersey colleges, the need for extensive remedial programs has not lessened.

Relationship to the Scholastic Aptitude Test (SAT)

Over the past several years, no significant change has been noted in NJCBSPT results. In contrast, the trend of SAT scores, after declining for two decades, has reversed. In 1985, the mean SAT verbal score for New Jersey increased 7 points and the mean SAT mathematics score increased 6 points. The absence of a comparable increase in the trend of NJCBSPT scores is attributable first, to differences in the nature and purpose of the two examinations and second, to the different populations of students taking the two tests.

The NJCBSPT and the SAT differ in the following ways:

- The SAT is designed as an admissions test, to measure aptitude, to predict first-year college grades, and to distinguish best between moderately well prepared and very well prepared students.

- In contrast, the NJCBSPT is a placement test of basic skills which is designed to differentiate most clearly among poorly prepared students and to be "easy" for adequately or well prepared students.

- The skills measured by the two instruments are not the same. The NJCBSPT, for example, includes an essay; the SAT does not. Furthermore, the SAT is more "time-pressured," while the NJCBSPT is designed to allow virtually all test-takers to complete it.

In addition, the test-taking populations differ. Data gathered over three years on the two test-taking populations indicate the following:

- The test taking populations overlap but are not the same. Of the 44,344 students who took the NJCBSPT in 1985, only 16,391 also completed the SAT. Relatively few of the 26,289 county

college freshmen, for example, took the SAT. Indeed, the majority of NJCBSPT takers did not take the SAT. Moreover, many of the SAT takers from New Jersey (up to 40%) did not attend New Jersey colleges.

For both of these reasons, it is not suprising that the trend lines of mean scores on the NJCBSPT and the SAT can diverge.

Remarks on the Basic Skills Problem

The Basic Skills Council has transmitted distressingly similar test results to the Board of Higher Education for each of the past seven years. It is clear that little can be done to avoid the undesirable consequence of low proficiency -- placement in college remedial courses. It is also clear that there are no simple or short term answers to a problem of this magnitude. Indeed, the problem is so pervasive that many students entering our colleges believe they are adequately prepared to begin their college mathematics and composition courses and are shocked when they learn that they must take remedial courses.

The Council believes that one approach to the improvement of the basic skills preparation of our college freshmen is to delineate the problem not only to college students and faculty but also to those in a position to influence schooling in the earlier grades. To this end, the Council will seek to provide a wider range of dissemination vehicles for the results and implications of the New Jersey basic skills testing program.

The Council would like to acknowledge the initiatives toward improving basic skills instruction in the middle and junior high schools that have been fostered by the Department of Education in preparation for the High School Proficiency Test. We hope that improvements in both writing skills and basic mathematics will be evident as the first class

which is required to pass this graduation test reaches college in 1989.

While the Council looks forward to the anticipated strengthening in preparation of the new high school graduates after 1989, there are also two demographic facts which will have a negative impact, in the near future, on the basic skills problem at the colleges. First, only 62% of freshmen enter our public colleges directly from high school. This percentage has been consistent over the last few years but may, in fact, begin to decline as the number of high school seniors drops over the next decade. If the colleges hold their total enrollments steady by recruiting more than the current 38% of "older" students, any improvement in the basic skills of recent high school graduates could be countered in the colleges by the greater numbers of these "non-traditional" students who typically have greater remedial needs than recent graduates.

The second demographic trend relevant to the basic skills problem is the continuing increase in the number of New Jersey residents whose first language is not English. While policy dictates that the NJCBSPT be administered only to admitted students who are not in need of English-as-a-Second-Language (ESL) instruction, our data indicate that at least 5% of the tested students declare that English is not their dominant language and over 15% indicate that they speak a language other than English at home. Further, 1980 census data indicate that New Jersey ranked third in the nation in the growth rate of its Hispanic population. Since this growth is concentrated in the pre-college age groups, the anticipated increased proportion of linguistically diverse students in our future freshman classes will certainly have an impact on collegiate programs. The Basic Skills Council is preparing to investigate the need for and feasibility of additional and alternate modes of assessment for these populations.

INTRODUCTION

The New Jersey Basic Skills Assessment Program was designed in 1978 with two purposes. First, it was intended to generate reports to the Board of Higher Education on the status of basic skills (reading, writing, computation and elementary algebra) preparedness of the entering freshman class in public colleges and universities. The second, and equally important purpose was to provide placement information to aid colleges in counseling students into appropriate course choices during the freshman year. These dual purposes remain central to the nature of the program.

"Basic Skills" refers to those skills of thought and communication that an individual needs not only to take advantage of the opportunities offered by a college education but also to become a fully participating member of society. These are not the minimal "coping skills" or "life skills" which many consider essential to mere survival (e.g., balancing a checkbook, reading a magazine, filling out a job application). Rather, the "basic skills" of reading, writing, and mathematics are essential for thinking, learning, and reasoning within the context of a college curriculum. They are fundamental building blocks which underlie all learning and which the Council believes are required for full participation in our society.

In 1978, the Basic Skills Council, in its initial report to the Board of Higher Education, defined and clarified what it meant by "basic skills":

> By 'basic skills' the Council means the tools of intellectual discourse used in

common by participating members of all academic communities. These tools are the language of words and the language of mathematics. Students need these tools to extract information, to exercise and develop the critical faculties of the mind, and to express thoughts clearly and coherently.

Without them learning is impaired, communication is imprecise, understanding is impossible. A test of 'basic skills,' therefore, is a test to determine whether an individual has developed the practical working skills of verbal and mathematical literacy needed to take advantage of the learning opportunities that colleges provide.

To define 'basic skills' in this way is not to deny the validity of other modes of communication -- within the artistic realm of discourse, for instance, the languages of music, motion, image, color, light, and texture express a universe of perceptions, feelings, and emotions which cannot be expressed adequately by words and numbers and logic alone. Nor is the Council's definition of the 'basic skills' inimical to the value of diversity. We are, to the contrary, exceedingly sensitive to the differences between colleges: differences in their students, differences in their curricula and pedagogical philosphies; differences in their missions. But in one respect all colleges are identical: their ultimate purpose is to foster learning. The Council asserts unequivocally that the 'basic skills' of reading, writing, and mathematics are a prerequisite to learning at the college level. If the possession of these skills is 'standardization,' we believe that standardization in this sense is good.

The NJCBSPT is a three hour and twenty minute examination consisting of an essay and four multiple choice sections: Reading Comprehension, Sentence Sense, Computation, and Elementary Algebra (see

Appendix A for a more detailed description of the NJCBSPT). The test is required of all freshmen, full and part-time, entering New Jersey public colleges. In addition, twelve independent colleges in the state voluntarily administer the NJCBSPT to their entering freshmen.

A new form of the NJCBSPT is developed each year and is carefully equated statistically to the previous forms. The scores are reported in standard score format so as to preserve comparability from year to year. See Appendix B for data on standard score means and standard deviations for each test section over the last five years.

The NJCBSPT was developed by the Basic Skills Council and first administered to freshmen entering public colleges in the Fall of 1978. Since then, approximately 400,000 students have taken the exam. Studies performed at both the state level and at local colleges have confirmed that the New Jersey College Basic Skills Placement Test is both reliable and valid. (Information on NJCBSPT publications and reports can be found on the inside back cover of this booklet.) The test measures skills that students entering college should have. Indeed the Basic Skills Council believes that the level of skills in reading, writing, and mathematics tested by the NJCBSPT is, at least, minimal for all students graduating from high school.

RESULTS

The New Jersey College Basic Skills Placement Test is issued in March of each year, and colleges administer the test locally, on their own schedules, through February of the following year. The student answer sheets (or computer data tapes) are sent to the Educational Testing Service for scoring and data analysis under contract with the Department of Higher Education. Students are tested only after admission and the results of the testing are used, in conjunction with other information, for initial placement in reading, writing and mathematics courses. Proficiency categories are defined by the Basic Skills Council but individual institutions set their own policy on appropriate student placement using NJCBSPT test scores and other available information. The Council has consistently recommended that placement be done not on the basis

of one subtest score but by a combination of several test scores and other information such as the Scholastic Aptitude Test scores, Test of Standard Written English scores and high school record.

Statewide Findings

The data in this report are based on the scores of the 44,344 students tested between April and October of 1985. This total represents a 4.7% drop from the 46,465 tested in 1984, continuing the predicted decline in entering freshmen during the decade of the 1980's. Though tested after admission, not all these students actually enroll in New Jersey's colleges. The discrepancy between numbers tested and numbers enrolled varies among colleges from a low of 5% to as much as 40%

The results of this year's testing differ only slightly from previous years. Large proportions (in some sectors the majority) of students enter our colleges lacking proficiency in at least some areas of reading, writing, computation and elementary algebra. Table 1 and figures 1-3 display the levels of proficiency exhibited by our entering freshmen in 1985. Three levels of proficiency ("lacking proficiency," "lacking proficiency in some areas," and "appear proficient") are defined for each of the three basic skills areas. "Verbal skills" is a composite score of the reading, writing and sentence sense subtests. Computation and elementary algebra are reported individually. See Appendix C for a detailed description of the proficiency levels as established by the Basic Skills Council.

Table 1* gives the proficiency information found over the years 1981 - 1985. There are two matters of concern in Table 1. First, the results on an absolute scale are poor. Of our entering freshmen:

In verbal skills, 26% appeared proficient,
40% lacked proficiency in some areas, and
34% lacked proficency

*For all tables in this report, slight variations in total student counts occur from table to table because: not all students complete all sections of the test; some students omit or miscode some background information such as their year of graduation from high school; and data from independent colleges are included in total state results and excluded from sector summaries and background information.

TABLE 1*

Comparison of Statewide Test Results[1]

1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	16,045	32	15,828	31	15,800	31	15,423	33	14,955	34
Lack Proficiency in Some Areas	20,190	41	20,900	41	20,387	40	18,899	41	17,862	40
Appear to be Proficient	13,416	27	13,740	27	14,442	29	11,853	26	11,376	26
COMPUTATION										
Lack Proficiency[2]	22,100	44	23,291	46	23,120	45	21,806	47	19,352	44
Lack Proficiency in Some Areas	12,665	25	11,259	22	12,606	25	11,481	25	10,679	24
Appear to be Proficient	15,068	30	16,585	32	15,595	30	13,178	28	14,313	32
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	30,979	62	31,220	61	30,607	60	27,703	60	26,087	59
Lack Proficiency in Some Areas	13,494	27	14,395	28	14,398	28	12,930	28	13,069	29
Appear to be Proficient	5,360	11	5,520	11	6,316	12	5,832	12	5,188	12

*Includes students who may not have enrolled in college after being tested

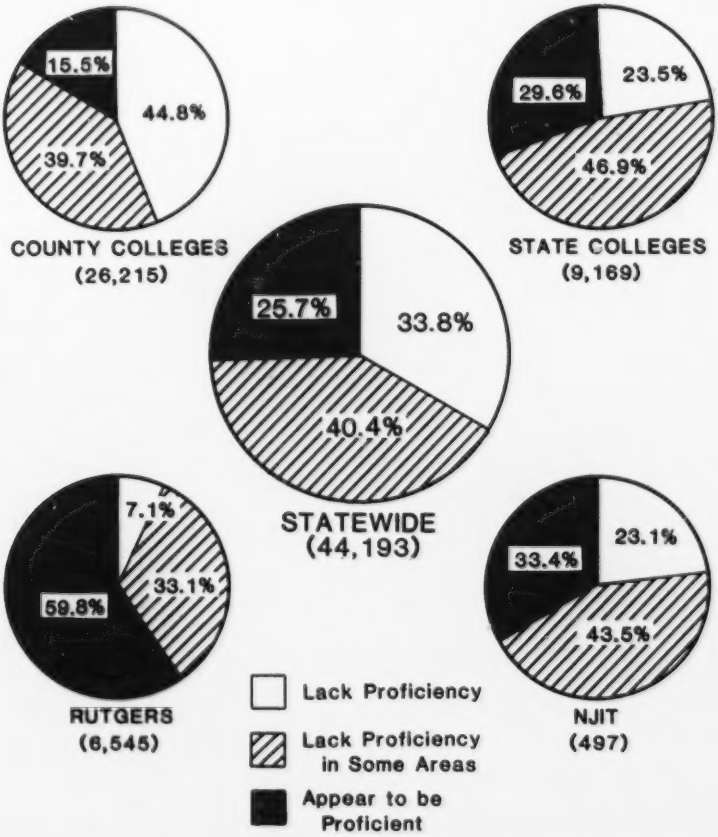
[1]See Appendix D for a description of proficiency categories

[2]Includes those students not attempting this portion of the test

FIGURE 1

Levels of Student Proficiency by Sector Fall 1985

Verbal *



* Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

FIGURE 2

Levels of Student Proficiency by Sector
Fall 1985

Computation

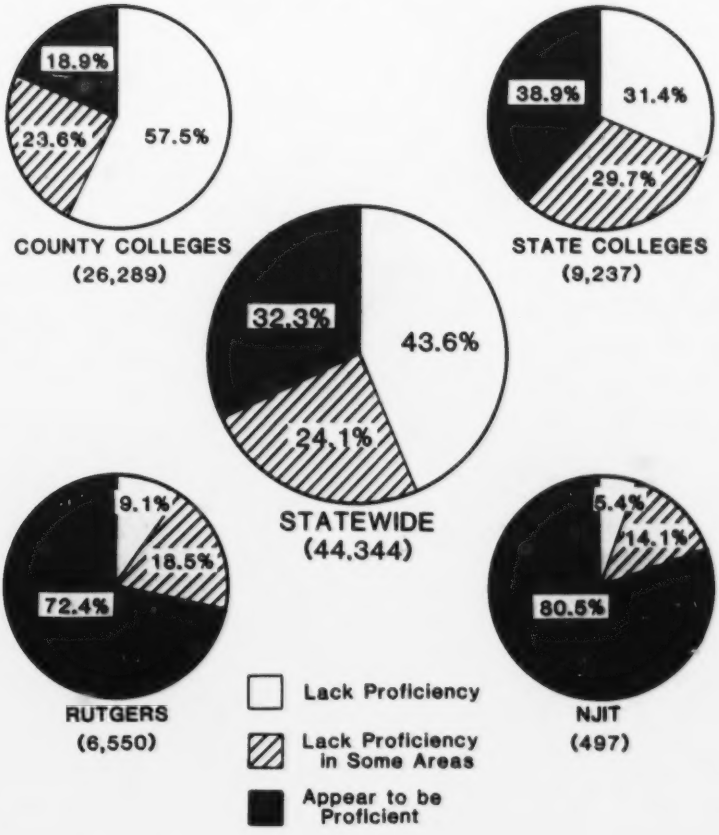
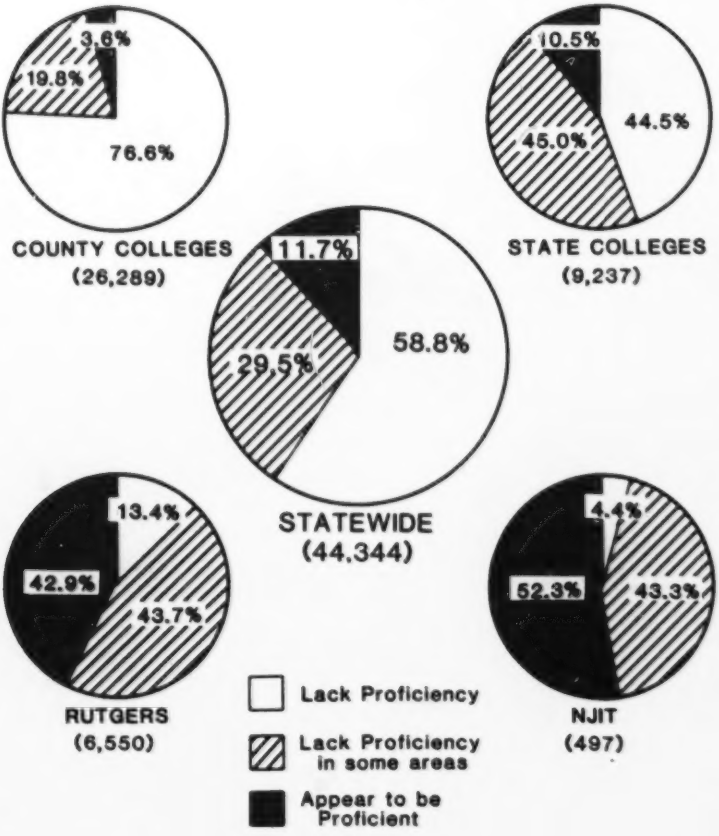


FIGURE 3

Levels of Student Proficiency by Sector Fall 1985

Elementary Algebra



In computation, 32% appeared proficient, 24% lacked proficiency in some areas, and 44% lacked proficiency.

In elementary algebra, 12% appeared proficient, 29% lacked proficiency in some areas, and 59% lacked proficiency

Only the computation subtest showed a slight improvement (4%) over 1984. Since the 32% proficient level was also reached in 1982, only to decline in '83 and '84, the Council cannot regard this increase as an upward trend.

Second, these poor results have been registered consistently over the past five years. In the "appear proficient" category, the verbal skills percentage has varied only over a three point range; in computation the range of variation is four points, and in elementary algebra the range is but one percentage point. Clearly these percentages of proficient students have remained distressingly low over the past five years.

Results by College Sector

Tables 2 through 5 present the proficiency results for each of the New Jersey college sectors (county colleges, state colleges, Rutgers and New Jersey Institute of Technology (NJIT) for the current year and the previous four years. Proficiencies in all areas of basic skills are higher in the four-year and university sectors than in the open-admission county colleges. The increase in computation proficiency was seen in all sectors. The county college sector gained two percentage points; the state college sector five percentage points; Rutgers gained two and NJIT five percentage points respectively.

In the verbal proficiency tests the county college sector was unchanged from 1984 with 16% of students judged proficient in reading and writing. The state college sector showed a one percentage point decrease in verbal proficiencies.

TABLE 2

Comparison of Sector Test Results[1]
County Colleges

1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	12,666	42	12,455	41	12,749	42	12,323	44	11,732	45
Lack Proficiency in Some Areas	11,891	40	12,183	40	12,290	40	11,192	40	10,414	40
Appear to be Proficient	5,359	18	5,634	19	5,472	18	4,549	16	4,069	16
COMPUTATION										
Lack Proficiency[2]	16,795	56	17,523	58	17,806	58	16,905	60	15,121	58
Lack Proficiency in Some Areas	7,368	25	6,472	21	7,277	24	6,592	23	6,208	24
Appear to be Proficient	5,907	20	6,385	21	5,594	18	4,694	17	4,960	19
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	23,451	78	23,321	77	23,413	76	21,404	76	20,140	77
Lack Proficiency in Some Areas	5,450	18	5,807	19	6,000	20	5,591	20	5,197	20
Appear to be Proficient	1,172	4	1,252	4	1,264	4	1,196	4	951	4

[1]See Appendix D for a description of proficiency categories

[2]Includes those students not attempting this portion of the test

TABLE 3

Comparison of Sector Test Results[1]
State Colleges

1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	2,232	22	2,342	21	2,109	20	2,152	22	2,156	24
Lack Proficiency in Some Areas	4,660	45	5,060	45	4,787	44	4,526	47	4,303	47
Appear to be Proficient	3,434	33	3,823	34	3,911	36	2,953	31	2,710	30
COMPUTATION										
Lack Proficiency[2]	3,454	33	3,948	35	3,621	33	3,473	36	2,897	31
Lack Proficiency in Some Areas	3,190	31	2,961	26	3,280	30	3,011	31	2,743	30
Appear to be Proficient	3,694	36	4,419	39	4,080	37	3,283	34	3,597	39
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	5,160	50	5,535	49	5,035	46	4,546	47	4,110	44
Lack Proficiency in Some Areas	4,126	40	4,573	40	4,572	42	4,038	41	4,153	45
Appear to be Proficient	1,052	10	1,220	11	1,374	13	1,183	12	974	11

[1]See Appendix D for a description of proficiency categories

[2]Includes those students not attempting this portion of the test

TABLE 4

Comparison of Sector Test Results[1]
Rutgers

1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	617	9	528	9	395	6	399	7	466	7
Lack Proficiency in Some Areas	2,275	35	2,401	39	1,885	30	1,956	33	2,167	33
Appear to be Proficient	3,661	56	3,279	53	3,959	64	3,486	60	3,912	60
COMPUTATION										
Lack Proficiency[2]	991	15	787	13	624	10	577	10	596	9
Lack Proficiency in Some Areas	1,356	21	1,125	18	1,134	18	1,177	20	1,214	18
Appear to be Proficient	4,212	64	4,307	69	4,493	72	4,102	70	4,740	72
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	1,260	19	1,109	18	864	14	738	13	878	13
Lack Proficiency in Some Areas	2,797	43	2,782	45	2,447	39	2,291	39	2,863	44
Appear to be Proficient	2,502	38	2,328	37	2,940	47	2,827	48	2,809	43

[1]See Appendix D for a description of proficiency categories

[2]Includes those students not attempting this portion of the test

TABLE 5

Comparison of Sector Test Results[1]

NJIT

1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	94	14	109	15	87	15	106	20	115	23
Lack Proficiency in Some Areas	289	42	313	43	250	42	204	38	216	43
Appear to be Proficient	298	44	300	42	262	44	231	43	166	33
COMPUTATION										
Lack Proficiency[2]	34	5	32	4	27	5	43	8	27	5
Lack Proficiency in Some Areas	86	13	79	11	80	13	91	17	70	14
Appear to be Proficient	559	82	611	85	492	82	407	75	400	80
ELEMENTARY ALGEBRA										
Lack Proficiency[2]	21	3	33	5	23	4	31	6	22	4
Lack Proficiency in Some Areas	273	40	270	37	212	35	208	38	215	43
Appear to be Proficient	385	57	419	58	364	61	302	56	260	52

[1]See Appendix D for a description of proficiency categories

[2]Includes those students not attempting this portion of the test

The Rutgers sector was unchanged with 60% of its students judged proficient. New Jersey Institute of Technology, on the other hand, showed a 10 percentage point drop (from 43% to 33%) in the proportion of its students judged proficient in verbal skills. This decline in verbal skills may be attributable to NJIT's acceptance of a higher portion of Educational Opportunity Fund (EOF) and international students in its freshman class.

In elementary algebra, where the results are consistently poor, they are also relatively unchanged by sector. The county colleges (where only 4% of students appear proficient) and the state colleges (where 11% appear proficient) are virtually the same as in 1984. After increases of 11 percentage points over 1983 and 1984 the Rutgers sector showed a five percentage point drop this year in its proportion (43%) of students who appear proficient in elementary algebra. NJIT with 52% of its students appearing proficient in algebra continues to have the best prepared students in mathematics but it is down four percentage points from 1984.

Recent High School Graduates

As in past years about 62% (27,791) of the test takers reported that they were recent (1985) high school graduates. It might be expected that recent graduates would exhibit substantially higher levels of proficiency (especially in mathematics) than would students who have been out of school for some length of time. The data in Table 6 indicate that recent high school graduates tested at our colleges exhibit only slightly higher proficiencies than those seen in the total group. Specifically:

In verbal skills, 28% appeared proficient,
43% lacked proficiency in some areas, and
29% lacked proficiency, and

In computation, 39% appeared proficient,
26% lacked proficiency in some areas, and
35% lacked proficiency and

TABLE 6

Comparison of Statewide Results
for
Recent High School Graduates[1]
1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
VERBAL										
Lack Proficiency	8,569	28	8,066	26	8,424	26	8,289	29	7,977	29
Lack Proficiency in Some Areas	13,251	44	14,038	45	13,716	43	12,548	44	11,977	43
Appear to be Proficient	8,668	28	9,004	29	9,896	31	7,943	28	7,837	28
COMPUTATION										
Lack Proficiency[2]	11,589	38	12,398	39	12,132	38	9,189	38	9,667	35
Lack Proficiency in Some Areas	8,210	27	7,500	23	8,493	26	6,549	27	6,985	26
Appear to be Proficient	10,741	35	12,066	38	11,611	36	8,303	35	10,639	39
ELEMENTARY ALGEBRA[2]										
Lack Proficiency	15,396	50	16,031	50	15,442	48	11,258	47	12,662	46
Lack Proficiency in Some Areas	10,662	35	11,411	36	11,439	35	8,874	37	10,280	38
Appear to be Proficient	4,482	15	4,522	14	5,355	17	4,009	16	4,389	16

[1]For each year, the most recent high school graduates are those who graduated the Spring prior to their enrollment in college

[2]Includes those students not attempting this portion of the test

In elementary algebra, 16% appeared proficient, 38% lacked proficiency in some areas, and 46% lacked proficiency

These proficiency levels are identical to 1984 with the exception of a four percentage point increase in the proportion proficient in computation. Figure 4 displays the three proficiency levels in each basic skill exhibited by the portion of the high school class of 1985 that was accepted and tested at New Jersey public colleges.

High School Mathematics and College Proficiency

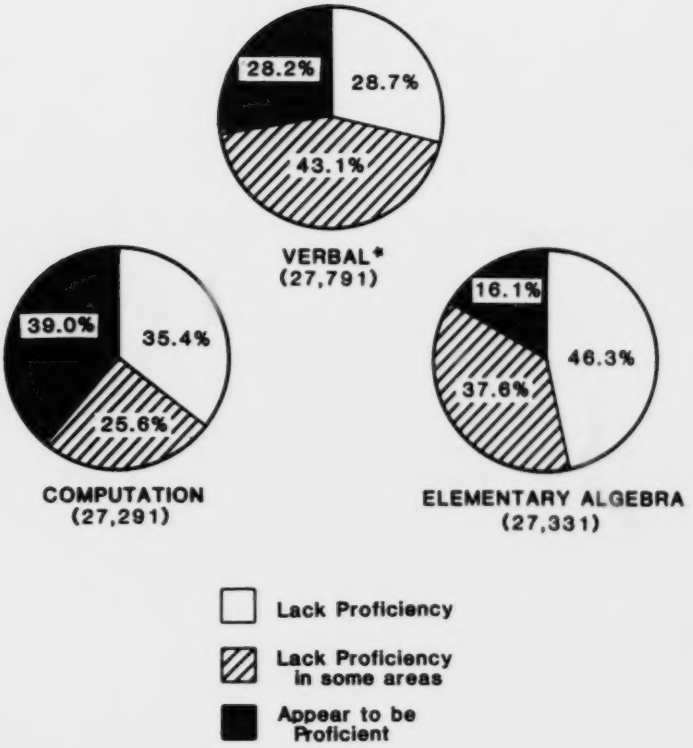
The relationship between high school mathematics courses taken and subsequent proficiency in computation and elementary algebra can be seen in Tables 7 and 8. These data include only 1985 New Jersey graduates who reported that their best language was English. The data suggest that virtually all students who take less than four years of mathematics exhibit grossly inadequate proficiency in elementary algebra. For example, in Table 8, course category #2 includes the 1,494 students who took only one year of algebra in high school. Of these only three students scored high enough to "appear proficient" in elementary algebra. In category #5, of the students who took the typical "college prep" program of Algebra I, II and Geometry, only 2.5% were proficient in elementary algebra. There were 6,399 students in this category and only 159 scored 26 or better out of 30 elementary algebra questions. In category #9, students who completed the "college prep" sequence plus calculus were much more likely to be proficient (61.7%) in elementary algebra. Less than 11% of the recent graduates (2,421 of 22,254), however, fell into this category.

The results in Tables 7 and 8 have been similar for the last five years. Three generic levels of preparation emerge from the course categories in these tables. First, students who have completed two (or fewer) years of mathematics show virtually no

FIGURE 4

Levels of Student Proficiency by Skill Area
Recent High School Graduates

Fall 1985



*Based on Total English composite score (Reading Comprehension, Sentence Sense and Essay).

TABLE 7

Relationship Between Mathematics Courses Completed in High School and the Computation Proficiency[1] of the Students Tested: 1985 New Jersey High School Graduates Only[2]

Course Category	TOTAL No.	Lack Proficiency		Lack Proficiency in Some Areas		Appear to be Proficient	
		Raw Score 0 -18		Raw Score 19-24		Raw Score 25-30	
		No.	%	No.	%	No.	%
1. Business Math or General Math	1454 (4)*	1285	88.4	146	10.0	23	1.6
2. Algebra I	1494 (0)*	1094	73.2	308	20.6	92	6.2
3. Algebra I & Geometry	2499 (1)*	1567	62.7	684	27.4	248	9.9
4. Algebra I & II	817 (2)*	500	61.2	234	28.6	83	10.2
5. Algebra I, Geometry & Algebra II	6399 (2)*	2337	36.5	2297	35.9	1765	27.6
6. Trigonometry (No.Sr Math)	4336 (0)*	586	13.5	1226	28.3	2524	58.2
7. Senior Math (No Trigonometry)	1006 (2)*	145	14.4	245	24.4	616	61.2
8. Trigonometry & Senior Math	1284 (0)*	85	6.6	273	21.3	926	72.1
9. Calculus (No Senior Math)	2421 (0)*	59	2.4	301	12.4	2061	85.1
10. Senior Math & Calculus	544 (0)*	11	2.0	50	9.2	483	88.8
Overall	22254	7669	34.5	5764	25.9	8821	39.6

*Non-takers (included in the total number).

[1]See Appendix C for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

TABLE 8

Relationship Between Mathematics Courses Completed in High School and the Elementary Algebra Proficiency[1] of the Students Tested: 1985 New Jersey High School Graduates Only[2]

Course Category	TOTAL No.	Lack Proficiency 0-13 No.	%	Lack Proficiency in Some Areas Raw Score 14-25 No.	%	Appear to be Proficient 26-30 No.	%
1. Business Math or General Math	1454 (493)*	1432	98.5	22	1.5	0	0
2. Algebra I	1494 (166)*	1411	94.4	80	5.4	3	0.1
3. Algebra I & Geometry	2499 (158)*	2233	89.4	263	10.5	3	0.1
4. Algebra I & II	817 (22)*	580	71.0	226	27.7	11	1.4
5. Algebra I, Geometry & Algebra II	6399 (81)*	3209	50.2	3031	47.4	159	2.5
6. Trigonometry (No.Sr Math)	4336 (10)*	864	19.9	2619	60.4	853	19.7
7. Senior Math (No Trigonometry)	1006 (6)*	178	17.7	621	61.7	207	20.6
8. Trigonometry & Senior Math	1284 (1)*	116	9.0	710	55.3	458	35.7
9. Calculus (No Senior Math)	2421 (3)*	73	3.0	854	35.3	1494	61.7
10. Senior Math & Calculus	544 (0)*	14	2.6	166	30.5	364	66.9
Overall	22254	10110	45.4	8592	38.6	3552	16.0

*Non-takers (included in the total number).

[1]See Appendix C for a description of proficiency categories.

[2]Recent high school graduates are those who graduated the spring prior to their enrollment in college. Limited-English-Proficient students are excluded.

probability of being proficient in elementary algebra. Second, students who complete three years of mathematics (including geometry and trigonometry) have approximately a 20% probability of being proficient in elementary algebra. Finally, students who complete four years of mathematics through calculus have about a two-thirds probability of being proficient in elementary algebra.

It should be noted that the studying of calculus is not necessarily the causal variable in ensuring proficiency in algebra. It is probably true that only the best prepared students from the three-year high school math sequence elect calculus. However, students who take senior math courses other than calculus also display higher algebra proficiences (between 55 and 66%) than the students completing only the three year sequence. The Council would like to see a strengthening of all mathematics instruction -- from grade school through elementary algebra -- so that more students will be sufficiently prepared to elect the fourth year of high school mathematics.

The difficulty level of the NJCBSPT elementary algebra test is set at approximately the ninth grade. Sample questions can be seen in Appendix D.

Background Information

Data on sex, enrollment status, year of graduation, type of high school program, class rank, courses taken in high school and perceptions of personal ability appear in Tables 9 through 20 and Appendix E. These data are self-reported by the students and consequently can contain selective distortions based on student self-image. For example, in Table 20, 43% of the statewide population considered themselves "Above Average in Mathematical Ability" and 85% consider themselves "Average or Above." Yet our proficiency data indicate that only 12% of these students appear proficient in ninth grade algebra. Only a third of the students "Want Help to Improve" in mathematics.

More than half of the students, 51%, felt themselves to be "Above Average in Written Expression" and only 4% felt they were "Below Average." The test results indicate that 34% lack proficiency in verbal skills. The gap between students' perception of their math and verbal abilities and their actual proficiency as judged by the test scores is distressingly wide. Students often arrive on campus feeling that they are prepared for freshman courses only to be shocked by placement into one or more remedial courses. The Council feels that students should be given more realistic appraisals of their basic skills proficiencies well before entering college.

Highlights of the 1985 demographic data include:

- o The majority of the students are female (54%).
- o Almost three-quarters (74%) of the students are full-time
- o Only 62% took the "academic high school program."
- o A small number (4.7%) said English was not their best language, while 15.5% said a language other than Englisn was spoken in their home.
- o Significantly more students (81%) took four years of high school English than took four years of math (48%).
- o Only 10% of the students took a calculus course.

TABLE 9

Students Tested, Fall 1985, By Sex

Self-Reported Information	Statewide #	%	County Colleges #	%	State Colleges #	%	Rutgers #	%	NJIT #	%
TOTAL NUMBER TESTED	44,344		26,288		9,237		6,550		497	
Male	19,594	44	11,529	44	4,100	44	3,018	46	414	83
Female	24,009	54	14,328	54	5,016	54	3,373	52	80	16
No Response	741	2	431	2	121	1	159	2	3	1

TABLE 10

Students Tested, Fall 1985, By Enrollment Status

Self-Reported Information	Statewide #	Statewide %	County Colleges #	County Colleges %	State Colleges #	State Colleges %	Rutgers #	Rutgers %	NJIT #	NJIT %
TOTAL NUMBER TESTED	44,344		26,288		9,237		6,550		497	
Full-Time	33,049	74	16,938	64	7,675	83	6,282	96	480	97
Part-Time	9,991	22	8,266	31	1,366	15	249	4	16	3
No Response	1,394	3	1,084	4	196	2	19	--	1	--

TABLE 11

Students Tested, Fall, 1985 By Year of High School Graduation

Self-Reported Information	Statewide #	Statewide %	County Colleges #	County Colleges %	State Colleges #	State Colleges %	Rutgers #	Rutgers %	NJIT #	NJIT %
1985	27,825	63	12,723	48	7,113	77	5,997	92	444	89
1984	3,402	8	2,559	10	583	6	160	2	28	6
1983	1,706	4	1,317	5	259	3	74	1	8	2
Prior to 1983	8,731	20	7,336	28	1,014	11	276	4	14	3
Did Not Graduate	1,050	2	989	4	39	--	16	--	2	--
No Response	1,630	4	1,364	5	229	3	27	--	1	--

TABLE 12

Students Tested, Fall 1985, By High School Program

Self-Reported Information	Statewide #	Statewide %	County Colleges #	County Colleges %	State Colleges #	State Colleges %	Rutgers #	Rutgers %	NJIT #	NJIT %
Academic	27,432	62	12,554	48	7,103	77	6,019	92	417	84
General	8,063	18	6,237	24	1,179	13	365	6	59	12
Career	5,760	13	4,867	18	584	6	112	2	11	2
GED	1,263	3	1,102	4	123	1	22	--	4	1
Other	481	1	419	2	41	--	11	--	5	1
No Response	1,342	3	1,109	4	207	2	21	--	1	--

TABLE 13

Students Tested, Fall 1985, By Self-Reported High School Rank

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
Highest Tenth	3,921	9	980	4	687	7	1,931	29	131	26
Second Tenth	5,883	13	2,106	8	1,431	16	1,963	30	129	26
Second Fifth	9,706	22	4,689	18	2,714	29	1,691	26	147	30
Middle Fifth	17,464	39	12,523	48	3,372	37	819	13	74	15
Fourth Fifth	3,954	9	3,177	12	564	6	65	1	10	2
Lowest Fifth	1,007	2	866	3	83	1	15	--	2	--
No Response	2,409	5	1,927	7	386	4	66	1	4	1

TABLE 14

Total Number of Years of English Studied in High School, Fall 1985

Self-Reported Information	Statewide		County Colleges		State Colleges		Rutgers		NJIT	
	#	%	#	%	#	%	#	%	#	%
One	782	2	675	3	80	1	18	--	2	--
Two	1,615	4	1,425	5	138	2	33	--	6	1
Three	2,459	5	2,019	8	269	3	107	2	24	5
Four	35,935	81	19,122	73	8,410	91	6,295	96	459	92
No Courses	389	1	303	1	47	1	28	--	3	1
No Response	3,164	7	2,744	10	293	3	69	1	3	1

TABLE 15

Total Number of Years of Mathematics Studied in High School, Fall 1985

Self-Reported Information	Statewide #	Statewide %	County Colleges #	County Colleges %	State Colleges #	State Colleges %	Rutgers #	Rutgers %	NJIT #	NJIT %
One	1,244	3	1,065	4	133	1	30	--	3	1
Two	6,130	14	4,952	19	800	9	151	2	5	1
Three	12,385	28	7,609	29	3,041	33	1,112	17	33	7
Four	21,088	48	9,588	36	4,963	54	5,202	79	452	91
No Courses	525	1	434	2	56	1	26	--	3	1
No Response	2,972	7	2,640	10	254	3	29	--	1	--

TABLE 16

Mathematics Courses Taken in High School, Fall 1985 Students Tested

Self-Reported Information	Statewide #	Statewide %*	County Colleges #	County Colleges %*	State Colleges #	State Colleges %*	Rutgers #	Rutgers %*	NJIT #	NJIT %*
General Math	14,750	33	10,971	42	2,239	24	982	15	103	21
Business Math	7,017	16	5,321	20	1,102	12	360	6	18	4
Algebra I	30,824	69	16,307	62	7,477	81	5,200	79	410	83
Algebra II	24,959	56	10,479	40	6,816	74	5,955	91	464	93
Geometry	28,349	64	12,941	49	7,450	81	6,089	93	473	95
Trigonometry	12,508	28	3,716	14	3,171	34	4,611	70	387	78
Senior Academic	4,420	10	1,168	4	1,241	13	1,608	25	155	31
Calculus	4,390	10	878	3	814	9	2,321	35	199	40
No Response	2,707	6	2,455	9	190	2	31	1	1	--

*Percentages exceed 100 since students may take more than one math course in high school

TABLE 17
Comparison of Background Data of Students Tested
Statewide
1981 - 1985
(By Percentages)

	1981	1982	1983	1984	1985
SEX					
Male	44	44	45	44	44
Female	55	54	54	54	54
No Response	1	2	1	2	2
ENROLLMENT STATUS					
Full-Time	78	77	78	75	74
Part-Time	20	21	21	22	22
No Response	2	2	4	2	3
HIGH SCHOOL PROGRAM					
Academic	60	61	62	61	62
General	19	18	18	19	18
Career	14	14	14	13	13
GED	4	4	4	3	3
Other	1	1	1	1	1
No Response	2	2	2	3	3
HIGH SCHOOL RANK					
Highest Fifth	23	22	23	21	22
Second Fifth	23	23	23	22	22
Middle Fifth	39	40	40	40	39
Fourth Fifth	7	8	8	9	9
Lowest Fifth	2	2	2	2	2
No Response	6	5	4	6	5
ENGLISH BEST LANGUAGE					
Yes	85	92	92	91	88
No	10	5	5	5	5
No Response	5	3	3	4	7
OTHER LANGUAGE SPOKEN AT HOME					
Yes	NA	14	15	15	16
No	NA	84	84	82	79
No Response	NA	2	1	2	5

TABLE 17A
Comparison of Background Data of Students Tested
Statewide
1981 - 1985
(By Percentoges)

	1981	1982	1983	1984	1985
NO. OF YEARS OF HIGH SCHOOL ENGLISH					
One	2	2	2	2	2
Two	5	4	4	4	4
Three	8	6	6	6	5
Four	81	83	84	83	81
No Courses	1	1	1	1	1
No Response	3	4	3	4	7
NO. OF YEARS OF HIGH SCHOOL MATH					
One	5	5	4	4	3
Two	18	16	16	15	14
Three	30	30	29	29	28
Four	42	46	47	48	48
No Courses	1	1	1	1	1
No Response	3	3	2	3	7
MATH COURSES TAKEN IN HIGH SCHOOL[1]					
General Math	37	36	37	36	33
Business Math	18	17	17	16	16
Algebra 1	72	71	72	71	69
Algebra 2	53	55	56	56	56
Geometry	63	63	65	64	64
Trigonometry	24	26	27	27	28
Senior Academic	10	10	10	10	10
Calculus	7	8	9	9	10
No Response	3	3	2	3	6

[1]Percentoges exceed 100 since students may take more than one math course in high school

TABLE 18

Self-Reported Years of English Studied
In High School
By Mean Scaled Scores on the Verbal Tests
1983 - 1985

Years Studied	Number			TOTAL ENGLISH[1]			READING COMPREHENSION			ESSAY[2]			COMPOSITION[3]		
	1983	1984	1985	1983	1984	1985	1983	1984	1985	1983	1984	1985	1983	1984	1985
FOUR	42,581	38,598	35,935	166	165	165	164	162	163	6.8	7.3	7.4	167	166	167
THREE	3,094	2,622	2,459	158	158	159	157	156	157	5.6	6.3	6.5	160	160	161
TWO	2,070	1,894	1,425	156	156	156	155	154	154	5.3	5.8	6.1	158	158	158
ONE	1,131	1,014	782	158	151	151	149	149	149	4.4	5.1	5.5	153	153	153

[1]Total English is a composite score based on all reading and writing sections

[2]Essay topics change yearly, therefore, mean scores can not be equated from year to year

[3]Composition is a composite score based on Sentence Structure/Sense and Essay

TABLE 19

Self-Reported Years of Mathematics Studied
In High School
By Mean Scaled Scores on the Mathematics Tests
1983 - 1985

Years Studied	Number			COMPUTATION			ELEMENTARY ALGEBRA		
	1983	1984	1985	1983	1984	1985	1983	1984	1985
FOUR	23,345	22,280	21,088	168	168	169	172	171	172
THREE	14,139	13,251	12,385	164	164	164	164	164	164
TWO	7,026	6,897	6,130	160	159	160	158	158	158
ONE	1,741	1,821	1,244	157	157	155	157	157	161

TABLE 20

Self-Reported Student Background Information
By Sector, Fall 1985

	County Colleges		State Colleges		Rutgers University		NJIT		STATE TOTAL	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	10,835	41	5,341	58	4,954	76	304	61	22,408	51
Consider themselves average in written expression	11,279	43	3,848	42	1,476	23	176	35	16,966	38
Consider themselves below average in written expression	1,233	5	679	7	68	1	16	3	1,588	4
Want help to improve writing	5,101	19	2,084	23	1,692	26	192	39	9,507	21
Want help to improve reading	2,582	10	1,016	11	739	11	97	20	4,592	10
Want help to improve sturly habits	7,926	30	2,960	32	1,867	29	179	36	13,525	31
Consider themselves above average in mathematical ability	8,511	32	4,391	48	4,877	74	452	91	18,963	43
Consider themselves average in mathematical ability	11,739	45	3,848	42	1,463	22	40	8	17,898	40
Consider themselves below average in mathematical ability	2,980	11	679	7	166	3	2	--	3,993	9
Want help to improve mathematics	8,568	33	2,805	30	1,696	26	131	26	13,827	31

Comparison of the NJCBSPT with the Scholastic Aptitude Test

As can be seen in all the foregoing year-to-year comparison tables, the results of the NJCBSPT, when expressed either as proportions of proficient students or as scaled score means, have changed little over the past five years. Of interest to both educators and the lay public is the fact that the Scholastic Aptitude Test results, as reported by the College Board, for New Jersey test takers, have improved over the past few years. In order to clarify the apparent divergence between the two sets of test results, the Council commissioned a statistical analysis of the relationship between the two instruments. Three factors contribute to an understanding of this relationship: 1) the nature (content and purpose) of the tests; 2) the population on which the two sets of results are based; and 3) the statistical correlation or relationship between the two sets of scores. Each will be discussed briefly.

Content and Purpose

The two tests were designed for different purposes. The SAT was designed to assess academic "aptitude" as judged by the outside criterion of predicting college grades in the freshman year. The NJCBSPT was designed to be a placement instrument for the use of college faculty in deciding which students need remedial work in reading, writing and mathematics. The SAT has questions designed to differentiate the merely competent student from the well-prepared student, as an aid to the admissions process in selective colleges. The NJCBSPT does not have many difficult questions and thus produces a "ceiling effect" wherein the competent and the well-prepared students all receive comparable (high) scores but the poorly prepared students are distributed over a wide range of scores. The broad range of discriminating power for poorly prepared students was a deliberate design specification for a "placement" test. Improvement in the skills of the better prepared students will affect SAT scores much more than NJCBSPT scores.

The NJCBSPT and the SAT use different types of questions. The SAT utilizes more complex verbal and mathematical reasoning items than the NJCBSPT. In contrast, the NJCBSPT contains relatively simple inference items in the Reading Comprehension test and only algorithmic items in the Elementary Algebra test.

Population Tested

The NJCBSPT and the SAT are taken by different but overlapping populations of students. In 1985, for example, the College Board reported 63,000 Scholastic Aptitude Test scores for the state of New Jersey. These were made up primarily of high school juniors and seniors. In 1985, the NJCBSPT was administered to 44,344 New Jersey freshmen of whom 27,791 were 1985 high school graduates. In computer matching runs performed for this report by the Educational Testing Service, only 16,391 students were found to have taken both the SAT and the NJCBSPT in 1985. Thus less than a third of the SAT scores for 1985 were attributable to students who also took the NJCBSPT and less than two-fifths of the NJCBSPT scores for 1985 were attributable to students who also took the SAT.

Statistical Relationship

Table 21 presents the means and standard deviations for the SAT and NJCBSPT from 1983 to 1985, for the groups of students who completed both tests. SAT verbal mean scores for this group rose 16 points and math mean scores rose 16.8 points over the three years while NJCBSPT mean scaled score increases ranges from only 0.2 points in reading to 1.5 points in algebra (one NJCBSPT point is roughly comparable to 10 SAT points as can be seen from the 10 to 1 ratio of Standard Deviations in Table 21.) While the means (especially the verbal sections) have moved upward, the SAT scores on both tests have increased relatively more than the NJCBSPT scores.

Table 22 contrasts the mean SAT scores over 1983 to 1985 for the total New Jersey test takers versus the subgroup who took both SAT and NJCBSPT. It is

clear that each year the means for the statewide total SAT-takers significantly exceed those of the takers of both exams. The mean SAT scores of both groups, however, have increase over the last three years. In fact, the SAT means of NJCBSPT takers have increased faster than the total state takers, as can be seen in the last columns of Table 22.

Table 23 presents the correlation coefficients between the SAT subsections and each of the NJCBSPT subsections. The strongest (highest numbers) relationships, as would be expected, are between NJCBSPT Reading Comprehension and the SAT Verbal section, between NJCBSPT Sentence Sense and the Test of Standard Written English (TSWE), and between NJCBSPT Computation and Elementary Algebra and the SAT Mathematics section.

While these correlations are high, they should not be interpreted to mean that the average test scores should move up or down equally on the two tests. Correlation coefficients are measures of the strength of rank ordering. For example, if persons are rank-ordered as "one" through "fifteen" on one measure, and the two measures are highly correlated, then the same persons would emerge in roughly the same order on the other measure. To carry the example further, if the two measures chosen were height and weight, we would find them to be highly correlated. If a group of college students were placed on a weight lifting program they would, on average, become stronger and heavier. Their mean body weight would increase, their height would remain constant, but the correlation or rank order relationship between the group's (changed) weight and (unchanged) height would remain about same. In a similar way, high correlations betwen the SAT and the NJCBSPT can exist while one of the test score means shows an increase and the other does not. While the Council is hopeful that NJCBSPT proficiencies will increase in the future, for the three reasons discussed here, statewide SAT mean increases in New Jersey are not necessarily the signal for an upturn in the NCJBSPT proficiency results.

Reporting Formats: "Proficiency" Vs. "Mean Scores"

In summary, the public reporting of the SAT mean scores and of the NJCBSPT proficiency percentages of entering college students present a seeming paradox that the Basic Skills Council has sought to resolve by analyzing the subgroup of students who took both exams. For this group of dual test takers the means on <u>both</u> their SAT scores and their NJCBSPT scores have increased since 1983. While the mean scores of the total SAT takers in New Jersey (63,000) increased in 1983, 1984 and 1985, the means of the total NJCBSPT takers (44,193) stayed constant or declined from 1983 to 1985 (see Appendix B). The group of dual test takers makes up a little over one third (37%) of the entering New Jersey freshmen whose basic skills proficiencies were assessed in 1985. While this group has improved its scores, it is clear from the NJCBSPT total means that the other two-thirds of the college entering cohort must have declined.

A final point concerns the reporting formats used for the two tests. The SAT program reports scaled score means on a range from 200 to 800 for each subtest. While the NJCBSPT program also reports scaled score means (on a scale from 135-195) it emphasizes <u>proficiency categories</u> as the preferred way to: 1) describe the college preparedness in basic skills of New Jersey's entering freshmen; and 2) to aid in placement practices. The percentage of students "lacking proficiency" has shown little change over the last eight years. Given the slight degree of overlap between the two test taking populations it is entirely probable that a better prepared but numerically small segment of students could account for an increase in the SAT (and NJCBSPT) <u>means</u> but have no effect on the percentage of underprepared students that are reported in the Council's "lacking proficiency" category.

TABLE 21

Means and Standard Deviations For Scholastic Aptitude Test and NJCBSPT Sub Tests From 1983 to 1985*

	1983 (17,906)	1984 (21,085)	1985 (16,391)
SATV	397.2	400.8	413.2
SD	94.9	99.5	98.1
SATM	434.8	441.1	451.6
SD	105.5	108.4	107.4
TSWE	39.5	40.0	41.0
SD	10.4	10.6	10.2
NJ Read Comp	165.4	164.1	165.6
SD	10.6	11.3	10.5
SS	167.6	167.5	168.5
SD	9.4	9.7	9.1
Essay	7.0	7.5	7.7
SD	1.8	1.7	1.6
Comp.	168.4	168.3	169.9
SD	9.0	9.2	8.7
Alg.	170.7	170.9	172.2
SD	11.2	11.0	11.0

*Data are only for students who took both tests in the same year.

SATV = SAT Verbal; SATM = SAT Mathematics; TSWE = Test of Standard Written English; NJ Read Comp = NJCBSPT Reading Comprehension; SS = Sentence Sense; Comp = Computation; and Alg = Elementary Algebra

Table 22

Means and Standard Deviations For Total New Jersey SAT-Takers Versus SAT/NJCBSPT Takers (1983-1985)*

	1983		1984		1985		1983 to 1985 Change	
	Total NJ (67,000)	SAT/NJCBSPT (17,906)	Total NJ (65,279)	SAT/NJCBSPT (21,085)	Total NJ (63,000)	SAT/NJCBSPT (16,391)	TOTAL NJ	SAT/NJCBSPT
SATV	418	397.2	418	400.8	425	413.2	+7	+16
SD	107	94.9	110	99.5	109	98.1		
SATM	455	434.8	458	444.1	464	451.6	+9	+17
SD	118	105.5	120	108	121	107.4		
TSWE	41.0	39.5	41.3	40.0	41.7	41.0	+0.7	+1.5
SD	10.9	10.4	11.3	10.6	10.9	10.2		

*Does not include "repeat" scores

TABLE 23

Correlations Between NJCBSPT Subtests and the Scholastic Aptitude Tests
1983 - 1985

	Reading			Sentence Sense			Essay			Computation			Elementary Algebra		
	1983	1984	1985	1983	1984	1985	1983	1984	1985	1983	1984	1985	1983	1984	1985
SAT Verbal	.71	.75	.73	.63	.68	.66	.53	.48	.46	.51	.53	.49	.47	.48	.47
SAT Math	.54	.58	.55	.49	.56	.54	.36	.34	.32	.72	.76	71	.72	.76	.72
TSWE	.66	.69	.66	.70	.75	.72	.57	.53	.50	.51	.53	.50	.47	.49	.47

APPENDIX A

Description of the New Jersey Basic Skills Placement Test

One purpose of the NJCBSPT is to help determine which students admitted to college need remedial instruction in certain basic skills; that is, the test was designed to discover which of the entering students do not have the level of skills generally expected of college freshmen and deemed necessary for successful completion of their academic programs. Thus, the basic skills measured by the test are defined not as the skills necessary to survive in the world (e.g., filling out applications, reading directions on medicine bottles, or the like) but as the skills needed to read college textbooks, to write papers for class, to solve mathematical problems, and, indeed, to succeed in a technological society.

The portions of the NJCBSPT dealing with verbal skills yield the following scores:

1. Total English score, a composite score based on the Reading Comprehension, Sentence Sense, and Essay sections.
2. Reading Comprehension.
3. Sentence Sense.
4. Essay.
5. Composition, a composite score based on the Sentence Sense and Essay sections.

A more detailed explanation of the test can be found in Interpreting Scores on the New Jersey College Basic Skills Placement Test, and a more detailed explanation of the writing sample can be found in Scoring the Essays; both booklets are available from the Department of Higher Education (see page inside back cover).

Reading Comprehension (37 questions, 50 minutes)

The Reading Comprehension section of the test measures students' ability to understand a written text, to extract the main idea from the text, and to draw appropriate inferences from it. Most, but not all, of the questions testing these skills are related to passages printed in the test book. The passages cover a variety of subjects and represent a variety of writing purposes and styles.

Students taking the test are expected to read the passages carefully, not merely skim them; they are expected to know what the text actually says, not merely what they think it might say. Close reading and attention to detail are expected, as is attention to tone. Students are expected to be able to generalize about the ideas in the passage and the method of their presentation. They are also expected to be able to identify ideas found in the passage when those ideas are stated in different words and to understand and identify the assumptions made by the author and the implications of the text.

For those NJCBSPT questions that are unrelated to passages, students are asked to identify the generalization that is supported by a group of statements or to identify the idea that best supports a given generalization.

Sentence Sense (40 questions, 35 minutes)

The Sentence Sense section uses two kinds of multiple-choice questions. The first requires students to identify faults in sentences and make appropriate corrections. The second asks students to rewrite sentences, much as they would do when editing their own writing.

The problems presented to the student for correction are concerned mainly with the structure and logic of sentences, not with grammar or punctuation. Questions deal with expressing ideas clearly and accurately, appropriately coordinating or subordinating ideas within sentences, and recognizing complete sentences. The types of questions used ask students either to identify problems and correct errors in sentences or to recast sentences to change structure or emphasis - tasks they might perform when they themselves write.

Essay (20 minutes)

In evaluating writing samples, the faculty members who serve as scorers take into consideration every aspect of the writing, from subject-verb agreement to organization of ideas, from use of the comma to appropriateness of examples, from spelling to style. Each sample receives two independent scores on a six-point scale. The score reported for the essay is the sum of these two scores. Thus, the highest obtainable score is 12, and the lowest is 2. For further information on scoring, refer to the NJCBSPT publication "Scoring the Essay" (see inside back cover).

Computation (40 minutes, 35 questions)

This section of the test measures the ability to perform basic arithmetic operations and to apply the operations to the solution of problems that involve fundamental arithmetic concepts. The questions cover operations with whole numbers, operations with fractions, operations with decimals and percents, and arithmetic reasoning.

Elementary Algebra (40 minutes, 35 questions)

This section of the test measures the ability to perform basic algebraic operations and to apply the operations to the solution of problems that involve elementary algebraic concepts. It tests operations with real numbers, operations with algebraic expressions, and the ability to solve equations, inequalities, and word problems.

APPENDIX B
1 of 6
NJCBSPT Mean Scaled Scores
Statewide
1981 - 1985

	1981	1982	1983	1984	1985
Number of Students Tested	49,833	51,135	51,321	46,465	44,344
MEAN SCALED SCORES:					
Reading Comprehension	163	163	163	161	161
(Standard Deviation)	(12.7)	(12.7)	(12.9)	(13.2)	(13.0)
Sentence Structure/Sense	164	165	165	164	164
(Standard Deviation)	(11.9)	(11.5)	(11.5)	(11.6)	(11.6)
Essay	6.7	6.9	6.5	7.0	7.1
(Standard Deviation)	(2.0)	(2.0)	(2.1)	(2.0)	(1.9)
Composition[1]	164	165	165	165	165
(Standard Deviation)	(11.5)	(10.9)	(10.7)	(10.9)	(11.1)
Total English[2]	164	164	164	163	163
(Standard Deviation)	(11.9)	(11.6)	(11.5)	(11.5)	(11.6)
Math Computation	164	165	165	165	165
(Standard Deviation)	(11.0)	(10.7)	(10.5)	(10.5)	(10.5)
Elementary Algebra	166	166	167	167	167
(Standard Deviation)	(12.4)	(11.7)	(11.8)	(11.6)	(11.7)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay

[2]Total English is a composite score based on all three reading and writing sections

APPENDIX B
2 of 6
NJCBSPT Mean Scaled Scores
County Colleges
1981 - 1985

	1981	1982	1983	1984	1985
Number of Students Tested	30,073	30,380	30,677	28,191	26,288
MEAN SCALED SCORES:					
Reading Comprehension	161	160	159	158	158
(Standard Deviation)	(13.3)	(13.3)	(13.4)	(13.4)	(13.1)
Sentence Structure/Sense	161	162	162	161	161
(Standard Deviation)	(12.3)	(11.9)	(12.0)	(11.9)	(11.8)
Essay	6.2	6.5	6.0	6.6	6.7
(Standard Deviation)	(2.0)	(2.0)	(2.1)	(2.0)	(1.9)
Composition[1]	161	162	162	162	162
(Standard Deviation)	(11.8)	(11.2)	(10.8)	(11.0)	(11.2)
Total English[2]	161	161	161	160	160
(Standard Deviation)	(12.3)	(12.0)	(11.6)	(11.5)	(11.5)
Math Computation	161	162	162	162	162
(Standard Deviation)	(11.0)	(10.6)	(10.1)	(10.1)	(10.2)
Elementary Algebra	161	162	162	162	162
(Standard Deviation)	(10.6)	(10.2)	(9.9)	(9.7)	(9.8)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay

[2]Total English is a composite score based on all three reading and writing sections

APPENDIX B
3 of 6
NJCBSPT Mean Scaled Scores
State Colleges
1981 - 1985

	1981	1982	1983	1984	1985
Number of Students Tested	10,338	11,328	10,981	9,767	9,237
MEAN SCALED SCORES:					
Reading Comprehension	165	165	166	164	163
(Standard Deviation)	(11.1)	(11.3)	(11.0)	(11.6)	(11.7)
Sentence Structure/Sense	167	167	168	167	167
(Standard Deviation)	(10.0)	(9.9)	(9.8)	(10.0)	(10.2)
Essay	7.2	7.3	7.0	7.4	7.4
(Standard Deviation)	(1.8)	(1.8)	(1.9)	(1.8)	(1.7)
Composition[1]	167	168	168	168	167
(Standard Deviation)	(9.6)	(9.5)	(9.2)	(9.4)	(9.7)
Total English[2]	167	167	167	167	166
(Standard Deviation)	(10.0)	(10.0)	(9.7)	(9.9)	(10.1)
Math Computation	167	167	168	167	168
(Standard Deviation)	(9.6)	(9.4)	(9.2)	(9.3)	(9.2)
Elementary Algebra	168	168	169	169	169
(Standard Deviation)	(11.2)	(10.7)	(10.8)	(10.5)	(10.3)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay

[2]Total English is a composite score based on all three reading and writing sections

APPENDIX B
4 of 6
NJCBSPT Mean Scaled Scores
Rutgers
1981 - 1985

	1981	1982	1983	1984	1985
Number of Students Tested	6,559	6,219	6,251	5,856	6,550
MEAN SCALED SCORES:					
Reading Comprehension	170	170	171	170	170
(Standard Deviation)	(8.7)	(8.5)	(8.0)	(8.6)	(8.6)
Sentence Structure/Sense	171	171	172	173	172
(Standard Deviation)	(8.3)	(8.6)	(7.1)	(7.1)	(7.2)
Essay	7.9	7.8	7.9	8.2	8.2
(Standard Deviation)	(1.7)	(1.6)	(1.7)	(1.6)	(1.5)
Composition[1]	172	171	173	173	173
(Standard Deviation)	(8.2)	(7.6)	(7.3)	(7.3)	(7.7)
Total English[2]	172	171	173	172	172
(Standard Deviation)	(8.3)	(7.7)	(7.4)	(7.6)	(8.0)
Math Computation	172	173	174	174	174
(Standard Deviation)	(7.8)	(7.3)	(6.8)	(6.8)	(6.7)
Elementary Algebra	177	177	179	179	179
(Standard Deviation)	(10.9)	(9.7)	(9.6)	(9.3)	(9.6)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay

[2]Total English is a composite score based on all three reading and writing sections

APPENDIX B
5 of 6
NJCBSPT Mean Scaled Scores
NJIT
1981 - 1985

	1981	1982	1983	1984	1985
Number of Students Tested	679	722	599	541	497
MEAN SCALED SCORES:					
Reading Comprehension (Standard Deviation)	169 (10.1)	168 (10.2)	169 (10.0)	162 (11.5)	165 (12.0)
Sentence Structure/Sense (Standard Deviation)	169 (9.0)	170 (9.0)	170 (8.9)	169 (9.5)	168 (10.4)
Essay (Standard Deviation)	7.2 (1.7)	7.2 (1.7)	7.0 (1.9)	7.5 (1.9)	7.1 (1.8)
Composition[1] (Standard Deviation)	169 (9.0)	168 (8.8)	169 (8.8)	169 (9.6)	167 (10.2)
Total English[2] (Standard Deviation)	169 (9.3)	168 (9.2)	169 (9.2)	168 (10.3)	166 (10.7)
Math Computation (Standard Deviation)	175 (5.0)	175 (5.1)	176 (5.1)	175 (6.1)	175 (5.7)
Elementary Algebra (Standard Deviation)	182 (6.8)	182 (6.6)	183 (6.5)	181 (7.7)	182 (7.3)

[1]Composition is a composite score based on Sentence Structure/Sense and Essay

[2]Total English is a composite score based on all three reading and writing sections

APPENDIX B
6 of 6
NJCBSPT Mean Scaled Scores
Statewide Comparison of Recent High School Graduates*
1981 - 1985

	1981	1982	1983	1984	1985
Number of Recent High School Graduates	30,540	31,964	32,236	28,466	27,291
Percent of Total Test Takers	61%	63%	63%	61%	62%
TOTAL ENGLISH					
Number Completing Test	30,488	31,621	31,538	28,401	27,262
Not Attempted	52	343	192	65	29
Mean Score	165	165	166	165	165
Standard Deviation	10.8	10.3	10.2	10.5	10.5
MATH COMPUTATION					
Number Completing Test	30,415	31,856	31,661	28,438	27,274
Not Attempted	125	108	69	28	17
Mean Score	166	166	167	167	167
Standard Deviation	10.1	9.9	9.6	9.8	9.7
ELEMENTARY ALGEBRA					
Number Completing Test	28,499	29,754	29,995	27,134	25,742
Not Attempted	2,041	2,210	1,735	1,332	1,549
Mean Score	168	169	169	169	169
Standard Deviation	12.1	11.4	11.5	11.3	11.4

*For each year, the most recent high school graduates are those who graduated the spring prior to their enrollment in college

APPENDIX C

A DESCRIPTION OF THE PROFICIENCY LEVELS ESTABLISHED BY THE BASIC SKILLS COUNCIL AS A GUIDE FOR COLLEGE PLACEMENT PROCEDURES

Based upon its understanding of the content and difficulty level of the test, and upon the recommendations of its advisory committees, the Council offers the following general propositions to assist in understanding the test results presented in this report.

Verbal Skills

For the purpose of this report, students who scored below 161 on Total English* were placed in the "Lack Proficiency" category. Those who fell in the 161-172 range on Total English were placed in the "Lack Proficiency in Some Areas" category while those students above 172 on Total English "Appear to be Proficient." A more precise understanding of an individual student's scores can be achieved by considering the following.

In the Council's judgment, all students with essay scores of 2, 3 or 4, and those students with an essay score of 5 or 6 but fewer than 80 percent correct on either of the two multiple-choice tests, are seriously deficient in their use of written language. An essay score of 2, 3, or 4 indicates pronounced weakness in writing: in these essays the message is not always clear, the idea is either not developed or not logical, and the conventions of written language are usually not observed. An essay score of 5 or 6, together with fewer than 80 percent correct on one or both of the multiple-choice tests, indicates a need for help in following the conventions of written language, and in developing and comprehending an idea in a coherent manner.

*Total English is a composite score based on all three reading and writing sections

Many students exhibit a pattern of performance that must be reviewed more carefully, since they probably require some assistance in one or more areas according to the requirements and standards of the individual colleges. Students in this category either did not demonstrate proficiency in one or more areas, or their essay and multiple choice scores may have exhibited a discrepancy. For example, a high essay score and a low sentence sense score is a pattern that bears examination. Essay scores of 5, 6 or 7 together with multiple-choice scores above 80 percent are "average" in that the essays tend to lack depth and coherence and, despite the multiple-choice scores, the writing samples may exhibit flaws in structure and/or language conventions. An essay score of 7 combined with scores of less than 80 percent correct on one or both of the multiple-choice tests indicates at best a marginal performance. An essay score of 8-12 combined with fewer than 80 percent correct on any one of the multiple-choice tests is a discrepant pattern, since the essay score indicates a range from above average to excellent, and the multiple-choice scores appear to contradict the essay score.

Students with essay scores of 8-12 and 80 percent correct on both multiple-choice tests seem to be proficient in the basic skills of reading and writing. The writers of these essays have control of both the language and the structures they are using; generally speaking, they can comprehend a relatively mature idea and develop it in standard English.

Computation

A scaled score of 164 or below (18 or fewer questions correct out of 30 on the 1984 test) indicates pronounced weaknesses in dealing with certain computational operations and, in particular, with problems involving percentages and decimals. Declining scores indicate progressively greater difficulty with operations involving fractions. Students scoring below 165 on the computation test are included in the category: "Lack Proficiency."

The range of scaled scores from 165 to 172 (19 to 24 questions correct) indicates greater familiarity

with elementary computation but still shows definite weaknesses. The particular weaknesses of a student can be identified only by examining individual item responses. Students falling in the range of 165 to 172 on the computation test fall in the category: "Lack Proficiency in Some Areas."

Students who achieve a scaled score of at least 173 (25 questions correct) seem to be proficient in the elementary computational skills measured by this test and fall in the "Appear to be Proficient" category.

Elementary Algebra

Students who achieve a scaled score of 166 or below (13 or fewer questions correct out of 30 on the 1984 test) lack any understanding of elementary algebra. Such students may possess a smattering of knowledge but have difficulty with a wide variety of elementary operations, and are not able in general to perform sustained operations involving a succession of simple steps. Students in this category ("Lack Proficiency") probably need to restudy elementary algebra from the beginning.

The particular difficulties of students who score in the scale range from 167 to 182 (14 to 25 questions correct) vary. They have some misconceptions, have some trouble dealing with equations involving letters rather than numbers, and probably cannot handle sustained operations well. The type of assistance or course work such students may require will depend on each student's background and can be determined by careful examination of the particular patterns of item responses. Students scoring in the range of 167 to 182 on elementary algebra are included in the "Lack Proficiency in Some Areas" category.

Students who achieve a scaled score of 183 and above (26 or more questions correct) seem to have no widespread weaknesses in performing elementary algebraic operations and fall in the "Appear to be Proficient" category. They probably can do simple, sustained operations. The test, however, does not extend far enough in difficulty level to determine whether students scoring in this highest range are able to complete a more complex succession of simple operations.

APPENDIX D

ITEMS TYPICAL OF THOSE INCLUDED ON THE NJCBSPT, MATHEMATICS SECTION
(ITEMS ARE MULTIPLE CHOICE IN THE ACTUAL TEST)

COMPUTATION

ITEM

1. $\begin{array}{r} 8.35 \\ \times\ 4.7 \end{array}$
2. $\frac{2}{5} + \frac{1}{2} = ?$
3. $35.2 - 8.07 = ?$
4. IF 6 POUNDS OF CHEESE COST $8.04, HOW MUCH WILL 4 POUNDS COST?
5. $\frac{7}{8} \div \frac{3}{5} = ?$
6. 30 PERCENT OF 200 = ?
7. $\frac{9}{20}$ EXPRESSED IN DECIMAL FORM IS?
8. $\begin{array}{r} 7\ \frac{1}{8} \\ -\ 3\ \frac{1}{6} \\ \hline \end{array}$
9. $0.6\overline{)360}$
10. IF THE PRICE OF A $0.60 PAD OF PAPER IS INCREASED BY 15 PERCENT, WHAT IS THE NEW PRICE?
11. $\frac{\frac{8}{7}}{\frac{2}{3}} = ?$
12. 20 IS 8 PERCENT OF WHAT NUMBER?

ELEMENTARY ALGEBRA

ITEM

1. $10A - 8B - 3A + 2B = ?$
2. $(3x + 1)(5x - 1) = ?$
3. IF $7x - 3 = 2$, THEN $x = ?$
4. IF $4x = 9 - 7x$, THEN $x = ?$
5. THE VALUE OF $Y = 3x^2 - 5x + 7$ WHEN $x = -2$ IS ?
6. $(3A + 4)^2 = ?$
7. IF $6(x - 2) + 5 = 2x$, THEN $x = ?$
8. A FACTOR OF $x^2 + 2x - 15$ IS ?
9. $\frac{B^8}{B^4} = ?$
10. IF $\frac{3}{5}x - 2 = \frac{4}{3}$, THEN $x = ?$
11. IN THE SOLUTION OF THE SYSTEM OF EQUATIONS BELOW, WHAT IS X?

    $(3x - y) = 11$

    $(5x + 2y) = 4$
12. IF $AX = C - BX$, THEN $X = ?$

APPENDIX E

Comparison of Statewide
Self-Reported Student Background Information
1981 - 1985

	1981		1982		1983		1984		1985	
	#	%	#	%	#	%	#	%	#	%
Consider themselves above average in written expression	25,225	51	25,789	50	26,631	52	23,554	51	22,408	51
Consider themselves average in written expression	20,699	42	21,004	41	20,862	41	18,849	41	16,966	38
Consider themselves below average in written expression	2,105	4	2,135	4	2,062	4	1,906	4	1,588	4
Want help to improve writing	10,678	21	10,621	21	11,209	22	10,061	22	9,507	21
Want help to improve reading	6,084	12	5,766	11	5,911	12	5,028	11	4,592	10
Want help to improve study habits	15,968	32	15,435	30	16,327	32	14,603	31	13,525	31
Consider themselves above average in mathematical ability	20,989	42	21,648	42	22,499	44	20,029	43	18,963	43
Consider themselves average in mathematical ability	21,701	44	22,206	43	21,939	43	19,608	42	17,898	40
Consider themselves below average in mathematical ability	5,180	10	4,987	10	5,015	10	4,603	10	3,993	9
Want help to improve mathematics	16,127	32	16,249	32	16,725	33	15,096	33	13,827	31

NJCBSPT Publications and Related Reports*

Interpreting Mathematics Scores on the New Jersey College Basic Skills Placement Test

Interpreting Scores on the New Jersey College Basic Skills Placement Test

Scoring the Essay

Teaching Reading & Writing: Observations derived from the results of the New Jersey College Basic Skills Placement Test

Report to the Board of Higher Education on Results of the New Jersey Basic Skills Placement Testing and Recommendations on Instruction and Curriculum, New Jersey Basic Skills Council, January 20, 1984

Report on the Character of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1984, New Jersey Basic Skills Council, October 18, 1985

Report on the Effectiveness of Remedial Programs in New Jersey Public Colleges and Universities, Fall 1982 Spring 1984, New Jersey Basic Skills Council, February 15, 1985

Student Information Bulletin 1985

*Publications and reports are available from the Basic Skills Office, New Jersey Department of Higher Education, 225 West State Street, Trenton, NJ 08625.

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